

AD _____

Award Number: DAMD-17-01-1-0313

TITLE: Undergraduate Training Program in Breast Cancer Research

PRINCIPLE INVESTIGATOR: Suzanne Ostrand-Rosenberg, Ph.D.

CONTRACTING ORGANIZATION: University of Maryland, Baltimore County
Baltimore, MD 21250

REPORT DATE: December 2005

TYPE OF REPORT: Annual Summary

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE 01-12-2005		2. REPORT TYPE Annual Summary		3. DATES COVERED 14 May 2001 – 13 Nov 2005	
4. TITLE AND SUBTITLE Undergraduate Training Program in Breast Cancer Research				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER DAMD17-01-1-0313	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Suzanne Ostrand-Rosenberg, Ph.D.				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Maryland, Baltimore County Baltimore, MD 21250				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The goal of this Training Program is to direct talented undergraduates into careers in breast cancer research. The program, called Breast Cancer Undergraduate Research Experience (BCURE), is a joint program between The University of Maryland Baltimore County(UMBC) and the University of Maryland, Baltimore Medical School (UM,B). The centerpiece of BCURE is a full-time, 10-week summer research experience in the laboratory of an established investigator (mentor) working in breast cancer research. Ten UMBC and UM,B faculty, whose research programs focus on breast cancer, serve as mentors. The Program Director is a well-respected breast cancer investigator who has personally trained >50 undergraduates. Trainees also participate in a Breast Cancer Course and an optional Biomedical Research Ethics course. Trainees present their projects at laboratory meetings, program conferences, UMBC Undergraduate Research Day, as well as at national and international meetings, if appropriate, and in research activities such as journal clubs and seminars. They meet regularly with the Program Director and formally present their research at Breast Cancer Research Day. BCURE trainees include UMBC and on-UMBC undergraduates and represent the diverse population in the Baltimore area. The program includes eight trainees per summer.					
15. SUBJECT TERMS Undergraduate students/research training/education/breast cancer					
16. SECURITY CLASSIFICATION OF:			UU	18. NUMBER OF PAGES 6	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)

Table of Contents

Cover.....	1
SF 298.....	2
Introduction.....	4
Body.....	4
Key Research Accomplishments.....	4
Reportable Outcomes.....	4
Conclusions.....	5
References.....	NA
Appendices.....	6

INTRODUCTION

The development of successful approaches for the prevention and treatment of breast cancer is completely dependent on well-trained, creative, and highly motivated research scientists studying breast biology and breast cancer. It is, therefore, critically important to direct our most talented young investigators into breast cancer research. The goal of the BCURE program is to direct undergraduate students into careers in breast cancer research. Students frequently focus on a particular research question based on an early, successful research experience in that area. By exposing undergraduate students to breast cancer research early during their studies, and giving them an outstanding research experience, we optimize the chances they will focus their research career on breast cancer. There is an existing large pool of UMBC undergraduate students who are academically talented and highly motivated and anxious to be involved in biomedical research. This program will provide these talented undergraduates with opportunities to participate in breast cancer research within the context of their undergraduate education. They will gain valuable experience in a specific area of breast cancer research and focus, and possibly solve, important research questions. In addition, the trainees will be exposed to other areas of breast cancer research through a special Breast Cancer Course and Breast Cancer Research Day. These events will enable students to gain a perspective on the breadth and depth of breast cancer research, and may suggest additional research areas for them to pursue as graduate students and/or post-doctoral fellows, or when they start their own laboratories as independent investigators. Our training faculty (mentors) are well-respected investigators in various areas of breast cancer research, and come from university, medical school, and cancer center settings. They have experience training undergraduates, and are enthusiastic about working with them. They are also very aware of the requirements for training undergraduates vs. graduate or post-doctoral students.

BODY

Key Research Accomplishments:

(The 4th year of the BCURE program involved only two students and offered an abbreviated program because most of the funding was used during years 1-3).

- ▶ The one summer 2004 trainee presented his research project in poster format at the end-of-the-summer undergraduate research “fest” at UMBC in August 2004
- ▶ The summer 2004 trainee continued to work in their mentor's laboratory during the academic year (2004-2005)
- ▶ One of the 2003 trainees continued to work in his mentor's laboratory during the academic year (2004-2005)
- ▶ The summer 2004 trainee participated in weekly laboratory meetings and conferences
- ▶ The eight trainees who participated in the 2003 summer program presented the final version of their projects in poster format at “Breast Cancer Research Day,” on April 22, 2004, an annual event featuring the trainees and an outside speaker/expert in breast cancer. (See “Reportable Outcomes”)

Reportable Outcomes:

- ▶ Eight undergraduate trainees worked during the summer of 2003 for 10 weeks each with individual faculty mentors studying basic questions in breast cancer.
- ▶ One of the 2003 and the single 2004 trainee continued
- ▶ The trainee from the BCURE 2003 class who had received an American Association for Cancer Research (AACR) travel award to attend the AACR annual conferences in 2004 and 2005, attended the 2005 conference and presented his work in poster format.
- ▶ All trainees presented their final projects in poster format at the annual “Breast Cancer Research Day in April 2004. Dr. Patricia Steeg from the NIH, NCI was the invited outside breast cancer expert. This event is a university-wide function at which an outside expert in breast cancer research presents his/her work and interacts with each student.

- Several of the BCURE 2001 and 2002 trainees continued in Ph.D. graduate programs; one of the 2003 trainees started in an MD/Ph.D program.

Summary Evaluation of the 3-4 year BCURE Program

A summary evaluation of the UMBC BCURE program was submitted with the 3rd year annual report. Due to lack of funds, we have not been able to do additional follow-ups on the students who participated in the BCURE program. Please see the 2004 annual report for this previously reported summary information.

CONCLUSIONS

The BCURE program at UMBC operated for four years and trained 25 students in a variety of areas of breast cancer research. Based on feedback from the participating students and from their mentors, the BCURE program has been exceptionally successful in raising students' awareness of breast cancer and in exposing them to career paths that involve significant breast cancer research. As stated in previous years' reports, we are very disappointed that the DOD Breast Cancer Program cancelled this undergraduate research program since we feel it had tremendous impact on students at a very impressionable stage of their training. Based on our 4 year experience, the relatively small investment in students at this early point in their training pays off substantially since many of them are incorporating research into their careers. In an attempt to continue the BCURE program we submitted an R25 application for a training grant to the NIH, NCI. This application was not funded. The major criticism was that this type of undergraduate training was not the responsibility of the NIH. We feel strongly that training the next generation of scientists is imperative for finding a cure for breast cancer and we are frustrated that this highly successful and innovative program has terminated due to lack of funds.

REFERENCES: None

APPENDICES:

Appendix 1: Trainee for the summer 2004 program.

Appendix 2: Faculty mentor for the summer 2004 program.

Appendix 1; Trainee for the abbreviated summer 2004 BCURE Program

Trainee	College Year Completed at the Start of the Program
Mr. Albert Forero	junior year (UMBC)

Appendix 2: Faculty mentor for the abbreviated summer 2004 program:

Faculty Mentor	Laboratory Location
Dr. Suzanne Ostrand-Rosenberg	Dept. Biological Sciences, UMBC